

What is claimed is:

1. A plating apparatus, comprising:

a plating solution bath which can hold a plating solution and is provided with a first electrode held in a state soaked in the held plating solution;

a workpiece holding mechanism which can hold a workpiece to contact its processing surface to the plating solution; and

a contact member, disposed in the workpiece holding mechanism, that can electrically contact with the circumferential edge of the workpiece so to form a conductive layer on the workpiece surface, which is in contact with the plating solution, as a second electrode;

wherein the contact member is divided along the circumferential direction of the workpiece to be electrically contacted.

2. The plating apparatus according to claim 1, further comprising electric current control sections which are connected to the respective divided sections of the contact member to control a plating electric current passing through the respective sections of the contact member.

3. The plating apparatus according to claim 2, wherein the electric current control sections are provided with an electric current detecting section that detects a plating electric current passing through the respective sections of the contact member and a controlled current source that adjusts the plating electric current in such a way that a value of the detected electric current becomes substantially

equal to a reference value.

4. The plating apparatus according to claim 2, further comprising a reference value setting section, connected to the electric current control sections in order to give a reference value to the electric current control sections, that sets the reference value.

5. The plating apparatus according to claim 3, further comprising a reference value setting section, connected to the electric current control sections in order to give the reference value to the electric current control sections, that sets the reference value.

6. The plating apparatus according to claim 1, wherein the contact member is divided into six or more sections along the circumferential direction of the workpiece to be electrically contacted.

7. A method of manufacturing a semiconductor device which employs a plating apparatus comprising a plating solution bathe which can hold a plating solution and is provided with a first electrode held in a state soaked in the held plating solution; a workpiece holding mechanism which can hold a workpiece to contact its processing surface to the plating solution; and a contact member, disposed in the workpiece holding mechanism, that can electrically contact with the circumferential edge of the workpiece so to form a conductive layer on the workpiece surface, which is in contact with the plating solution, as a second electrode, the contact member being divided along the circumferential direction of the workpiece to be electrically contacted, the

method comprising:

holding the workpiece by the workpiece holding mechanism;

bringing the processing surface of the held workpiece  
5 into contact with the plating solution; and

plating on the processing surface while controlling the plating electric current passing through each divided section of the contact member.